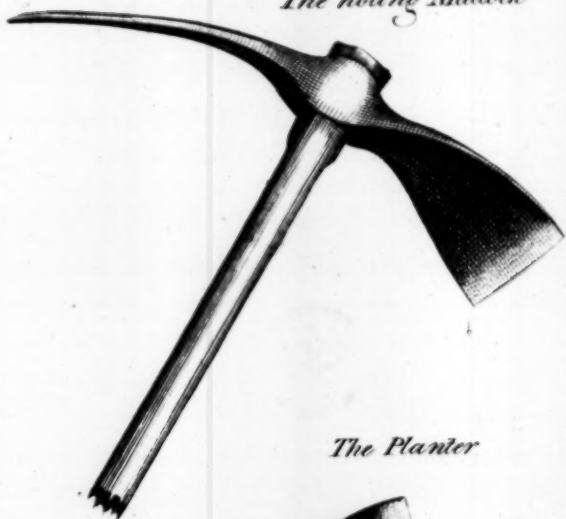


The holing Mattock

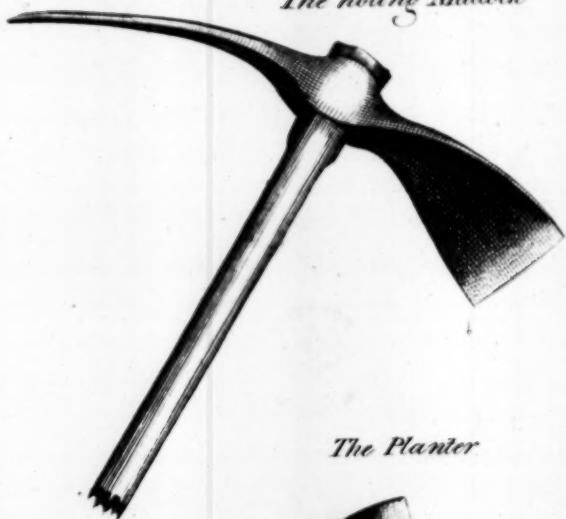


The Planter



Vide Page 55.

The holing Mattock



The Planter



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THE
PROFITABLE PLANTER.

A Treatise
ON
THE CULTIVATION
OF
LARCH
AND
SCOTCH FIR TIMBER:

SHOWING THAT
THEIR EXCELLENT QUALITY
(Especially that of the former)
WILL RENDER THEM SO EXTENSIVELY USEFUL,
AS GREATLY TO PROMOTE THE
Interests of the Country.
WITH
DIRECTIONS FOR PLANTING,
IN VARIOUS SOILS AND SITUATIONS,
BY A NEW AND EXPEDITIOUS METHOD;
ALSO, FOR
THE MANAGEMENT OF PLANTATIONS.
To which are added,
USEFUL HINTS, *in regard to SHELTER and ORNAMENT.*

BY **W. PONTEY,** *K.*
NURSERYMAN AND PLANTER.

HUDDERSFIELD:

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SON, HALIFAX; AND HURST, WAKEFIELD.

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ADVERTISEMENT.

THOUGH the writer of the following pages has, for several years, had considerable practice, as a contract planter, he means not to attach more importance to it than that of being enabled, by industry and observation, to ascertain principles, which he was previously persuaded were founded in reason and nature; nor does he pretend to any superior share of abilities; but, attached to the interests of planting, (much more from choice than necessity,) he has, from early life, when viewing the works of others, not contented himself with seeing that they were successful or otherwise, but has reasoned and in-

quired, in order to discover why they were so;—and he now presents a part of the result, for the decision (and, he hopes, the benefit) of an impartial public.

SPECIMENS OF LARCH WOOD, of a tolerable age, being, in most places, difficult to be procured, it is thought necessary to furnish them with the treatise. They were cut from the trees mentioned in page 93. Those of a greater age or slower growth would have supplied them of a finer grain; but these may give a satisfactory idea of the article.

Entered at Stationers'-Hall.

THE

Profitable Planter.

THE man of science, in common with the carpenter, knows the use of an oak or an ash, but, with respect to English-grown Firs, generally contents himself with the received idea, that *they are of little value*; hence they are seldom cultivated for profit; and, though much indeed has been written, and to the purpose, on the management of oak, ash, &c. for timber, we have commonly been taught to consider the planting of firs as merely for shelter or ornament.

Relying on information so superficial, we have neglected to cultivate, properly, an article extremely useful, and of which, though several species will grow very freely in this island, we import, annually, immense quantities, at an enormous expence. A circumstance sufficient to induce the reflecting mind to inquire, whether it be not possible *to avoid the greater part, if not the whole, of that expence*, by a right cultivation of English firs; and to feel astonished, that a subject of the first importance should have hitherto met with so little attention.

The motive for such inquiry will be greater, when we seriously reflect on the present scarcity, and consequent advance of price; and our ideas will probably turn to the day, not long elapsed, when the article was sold at little more than one third of what it now is. And so long as we depend upon foreign markets for a

supply, it is impossible to know what means may be used, and what circumstances arise, to occasion such scarcity; consequently, impracticable to form any opinion of the price that may be exacted, or the inconveniences and injuries which the want of it may produce.

Whoever has attentively examined the subject, and has the interest of the nation at heart, must see the necessity of thoroughly investigating, whether there be any thing, in the air or soil of our country, to prevent the growing of good fir timber.

That we have few English-grown firs of sufficient scantling for the different purposes of building, will readily be admitted:—but whence proceeds the deficiency?—Prejudice says, “ we cannot grow *them good* ;” and ignorance and indolence approve the assertion. But should

it be found that the said answer is contrary to truth, and that the scarcity in question is the consequence only of erroneous notions, it will certainly be useful to expose the same, to trace their causes and effects, and to furnish those observations which experience has suggested; for theories, however plausible, are by no means the guide a prudent man ought to follow, in the science of planting and growing timber; because, while satisfied with commonly received opinions, though it is probable we are in the right, there is a chance of our being wrong; and he is a very inattentive observer who, acting as a planter of firs, does not discover, that if men had not usually taken their ideas upon trust, the business must long ago have been reduced to something like a system.

They would have found out, not only what firs grow best in particular soils and

situations, but the peculiar kinds which thrive in most of them; and, moreover, would clearly have ascertained, the properties of the timber of all, or at least of so many as, being little tenacious of soil or situation, were likely to be most profitable. But, unfortunately, instead of having got thus far on the road of knowledge, very few have yet made any progress; and, which is worse, the majority see not the necessity of such a journey. In short, they have no idea of reaping any advantage from it; why, therefore, should they labour for that which cannot profit?

Of the truth of this, we have ample proof; for the planters of the last age generally used Scotch ones only, in a manner that leaves us at a loss to discover what end they had in view, unless it was the rehearsal of their own funerals; for if they had any ideas of use, shelter, or ornament, they mistook the means.

That the planters of the present age greatly surpass those of the last, is acknowledged; but, having adopted shelter and ornament, they sacrifice every thing else to them; or they would not continue to plant all the various forest trees upon all sorts of soils, and to cut down the most valuable, to make room for the most worthless.

The reader will observe, that, by the most valuable, I mean such as will be worth the most money in a given time, (suppose thirty years;) and by the most worthless, such as will produce the least in the same period:—quantity and quality being out of the question, except as they affect the price.

I would premise further, that, consistent with the preceding, I pay no regard to antiquity, for, if I find even the oak and ash mixed with larch and Scotch

fir, and the former making but little progress, while the latter are flourishing, I shall not hesitate to call them inferior;—nay, were both in a thriving state, yet, if it seem next to a certainty that the former would not fetch ten pounds, when the latter would be worth thirty, I should discard them accordingly.

If the foregoing prove the only true method of estimating the value of trees planted for profit, it is evident that the modern planters, with very few exceptions, have acted upon mistaken principles, and must continue to do so, till better acquainted with the growth and qualities of larch and Scotch fir timber.

Having already noticed the general opinion, in regard to English-grown firs, viz. that their principal use is for shelter or ornament, it seems natural to ask, how is it possible for persons to im-

bibe such a notion, when unsupported by facts?

To this I answer, that the greater part formed their ideas from report, without giving themselves the trouble of inquiry; and, of those who considered the subject, only a very small proportion had an opportunity of seeing a deal board cut from a fir of English growth, of sufficient age and scantling to enable them to determine its quality.

Were we to expect substantial timber in oak sapplings, it would be accounted absurd;—is it not equally improper to seek for it in fir poles?

In regard to the Scotch fir, which is almost the only one that has had any thing like a trial, the young timber has generally been condemned as *brittle*, while the old has been rejected on ac-

count of its *knottiness*, consequently of little value for many purposes, and totally unfit for others;—but, had it been considered, whether the knots were natural or merely accidental, it probably would have been discovered, that the defect had its origin in the want of proper management.

Oaks growing in hedgerows, being single, branch out near the ground, and are suffered to retain those branches a long time; the timber is, therefore, almost uniformly knotty; while that of such as grow in thick woods is as regularly clean to a considerable height.

It is nearly similar with Scotch firs; for the usual practice of the last age was, to plant them either singly or in rows, at several yards distance from each other, where they were left to keep their branches, as long as they continued

green, whereby the timber is knotty; a fault which the present mode of planting tends much to remedy.

It is necessary that I explain what is signified by the present mode, as I write for more than one class of readers, and wish in this, and all other parts of the work, to be clearly understood:—should I be so fortunate, my end will be answered.

I mean, then, the general practice of planting large plantations tolerably thick, avoiding regular rows as much as possible; where, as with oaks in woods, the lower branches, not having a sufficient supply of air, soon die and drop off; and the trees, being, in some degree, drawn up by each other, grow straight, and free from thick branches, the cause of large knots.

It will be new to many, when told, upon the authority of the Encyclopedia Britannica, that the red deal, imported from Petersburg, is no other than the species of fir we call the Scotch; and every observation, I have been able to make, seems to confirm the fact; but, be that as it may, (the knots excepted,) the Scotch does not appear, in any respect, less valuable*.

Here it may be important to offer a few remarks, upon the causes and consequences of the different sorts of knots, found in timber; as they equally apply to the Scotch fir, larch, oak, &c.

* Since writing the above, I have seen some plantations of firs, (mostly Scotch,) which directly corroborate it. They were planted thickly, about sixty years ago; and, though they do not appear ever to have been pruned, the timber, to a reasonable length, is as clean, when sawn, as most foreign deal.

Live knots, or such as are incorporated with the wood from the core to the bark, whether large or small, are the remains of branches, that were alive either at or near the period when the trees were cut down; and dead knots, of such as have been left upon the trunk after they died, and, sometimes, till they have fallen of themselves:—the trunk continuing to grow, in the interval, closes upon, but cannot unite with them, and, therefore, they become dead knots from that part.

But in some trees, particularly the oak, the mischief of such dead branches does not end here; for, as the trunk continues to increase, and the dead branches to rot, it often happens that the latter, when they fall, leave hollows in the trunk, capable, from their direction, of holding water; which, acting upon the end of the branch, or knot, quickens its

decay, and not unfrequently injures the heart of the tree.

Much of the evil, with regard to dead knots, may be traced to the woodman's method of pruning, by leaving knags or spurs, of some inches in length. If the tree produce a shoot, near the end of the spur, there will be a live knot to the said shoot, and a dead one beyond it; but, when the tree produces none, (as is universal with firs, and almost general with those trees which are in thick plantations,) the whole length of the spur becomes a dead knot; so that, in either case, we have these defects, where otherwise the timber would be perfectly clean.

If the above point out the true causes, the attentive reader will easily deduce from them, the obvious means of preventing what none can cure. Aware of

the bad consequence of large knots, he will closely prune his trees, to a reasonable height, while the branches are small*; not all at once, but from time to time; so that he will, in a great measure, form the trees, though he cannot make one leaf of them. And, for dead knots and hollowness, he will apply the same easy preventive to all branches, great or small, so soon as they appear to be dead: and, by combining causes and effects, readily perceive, that, by this practice, most sorts of timber may be grown sound, and nearly clean, to a sufficient length; as the knots will be very small, and found only near the core†.

* Trees grown for shelter or ornament, should be pruned to suit particular situations.

† There are knots which do not originate in the core; but, as they can happen only when the tree has produced fresh shoots, from accidentally losing its

The woodman may exclaim against this doctrine, as militating against his *good old practice*, which may fairly be denominated the dead knot system; or, if he like *lazy system* better, I have no objection; for it requires no logic to prove, that it is easier to take off a branch in that slovenly manner, than to cut it off clean, and close to the stem. The practice is said to be adopted merely to prevent hollowness; and in old trees, which are no longer increasing in size, it may, in some cases, avert the evil for a time, because a live branch, so cut, will be some years before it rots; yet, when it does, the tree will be in more danger than from the mode I have recommended. But this is leaving the principal subject; which is, how to preserve a tree

head, or being over pruned, they are an exception to the regular order of nature.

clean and sound, to its full period of growth and usefulness, not beyond it.

As to the qualities of the timber of the other sorts of firs, commonly cultivated in England, besides the larch and Scotch, I have not sufficient materials to enable me to form a decisive judgment; but, from the information I have been able to collect, it seems that the greater part is much inferior; and though, from causes we are unacquainted with, there may be exceptions, yet they never can be so serviceable to the forest planter; for they do not uniformly grow as freely in fertile soils, and are improper for bleak barren lands,—those blanks in nature, which the planter's aid alone can render prolific, beautiful, and sheltered.

Though such situations must abundantly repay his useful toils, it is not meant they will do so exclusively, for the

benefit of warmer and better soils is not disputed; but convinced that on these requisites the thriving of larches and Scotch firs does not depend; that their timber is of great value; and that they improve the land which is contiguous, by affording shelter; I feel myself fully justified in asserting their superiority.

In considering the larch as a fir, which is the received opinion, and sufficient for my purpose, I have nothing to do with botanical distinctions; for it differs but little from them outwardly, except in casting its leaves or spines in winter; while its timber, with many of the properties of fir, is, in several respects, so much superior, that I should recommend its being planted alone, were it not necessary, in exposed situations and barren soils, to introduce, by way of screen, a quantity of Scotch firs.

The taste for planting has much increased within the last thirty years, especially among the higher ranks of society; whose ideas, I believe, have seldom gone further than shelter and ornament, consequently their plantations have not become so extensive as they otherwise would; nor been managed so as ultimately to produce, either to the proprietors or the public, half the benefit they are capable of; and the evil may be attributed to one source, viz. an imperfect or totally wrong notion of the qualities and value of larch and Scotch fir timber, especially the former.

An assertion so diametrically opposite to current opinions, cannot be fully credited, unless it be proved; for, where testimony is incomplete, but few proselytes are gained. We are informed, by an old observation, that *some* men will admit the evidence of hearing, but ALL

that of *fight*;—to this trial, then, I call every one, who has any taste for, or interest in, this important subject; and, with them, such as have an opportunity of promoting its interests, either by precept or example.

Look at the plantations of larches, within your knowledge; examine the foil, and say, if, in most situations, they do not exceed, in quickness of growth, every tree whose timber bears any comparison in value;—consider next the quality and texture of their wood:—I then leave you to determine, whether it ought not to be cultivated in preference to any other.

That larch is equal to the best foreign deal timber, for all purposes to which it is usually applied, and greatly superior to it for many others, is obvious; inasmuch as the boards are more free from

knots, harder, and less apt to split, being nearly as tough as ash, which will certainly much extend its usefulness; for, having many of the qualities of that wood, though, perhaps, not in an equal degree, it will frequently be found a substitute for it. For the oak it will also be a good one, in many instances; because its heart is equally durable, and it grows as well-hearted as any oak whatever. To which I may add, that, in consequence of its beautiful colour and fine grain, being capable of receiving a very high polish, it will be found excellent for numerous useful and ornamental articles of furniture and fixture, now made of mahogany; such as tables, chairs, desks, cupboards, clock-cases, bed-posts, balusters and rails for stairs, doors, shop-counters, cornices, &c. In a word, it will supply the place, in a greater or less degree, of almost every sort of wood now in use, from mahogany to alder; and, if

cultivated freely, will considerably diminish the consumption of the whole.

Before I quit the subject, I shall mention one thing of importance, viz. that these trees may be cut down at any season;—probably the best is in August or September, their principal time of growth. It is contrary to the prevailing opinion and practice, in regard to other woods; but, I think, will appear natural, when the properties of sap, in general, is considered, in opposition to that of firs; for the sap of most deciduous trees, or such as cast their leaves, is only a thin watery fluid; and, if the trees be cut down while that is in circulation, it tends to rot them; but that of the other, being the purest turpentine, hardens in the pores of the wood, and resists moisture; hence the durability before mentioned. This may easily be demonstrated, by taking a piece, fresh cut,

and examining it, with a good magnifier, in the sun, or by the light of a candle. Another quality, peculiar to it, is, that, though cut down, as aforesaid, it will not crack with any tolerable degree of heat.

If the foregoing account of the larch be well founded, (and the most captious will find it difficult to prove the contrary,) it appears, that the landed interest of the nation, collectively, have much to learn, in regard to its culture and uses, and still more to regret, that it was not done a century ago; for, if it had, immense sums would, annually, have been saved, which were sent abroad, and paid in duties, freights, &c. while every one who had used the article, would have been a gainer.

These advantages, though great, are not the only ones; for the lands, once

planted, would not have gone without their share of improvement; as even barren soils, if planted with firs, will, in the course of forty or fifty years, become fertile; because these trees, if the stratum be loose enough to admit their roots, draw a great portion of their nutriment from a considerable depth; part of which, ascending to their tops, forms their leaves or spines, which, falling, become the food of vegetables, and, eventually, of man.

Should a plantation, one year with another, increase one tenth of an inch, in depth of soil, for fifty years; at the end of that term, an increase of five inches will be found, of a quality that cannot fail of making it ever after good pasture land; supposing the trees cut down, and the roots not extirpated.— Thus we perceive a tree, by the simple operation of nature, performing what all

the art of man could never effect; in rendering useful what is beyond his reach; consequently, planting stamps an immense value, on what is and must for ever remain useless without it.

As many of the advantages, derivable from the planting of larch and Scotch firs, arise from duly considering, that they will not only grow, but thrive, in a nutriment totally unfit for corn or grass, I proceed to demonstrate the fact.

Part of the extensive chain of hills, which connects this county with those of Lancaster, Chester, and Derby, have been planted, from time to time; and, wherever that has been done properly, the larch and Scotch fir have uniformly succeeded.

It is observable of these hills, that, though the surface differs very materially,

the second stratum is usually a reddish yellow sand, full of loose stones. In this sand, not one stalk of grain, or blade of grass, will grow, to be of any value; and yet, when the top stratum is thin enough to admit the roots into the second, the trees are certain to grow freely.

In planting upon these hills, the top (which is a black soil, mixed with a great deal of white sand, and grows nothing but heath,) is generally the greatest difficulty we have to contend with, though, for agriculture, it is found infinitely preferable to the red sand, or second stratum; but so little nice are these trees, in regard to soil, (excepting the black earth before mentioned,) that they are seen to thrive amazingly in beds of sand, washed from the higher parts of moors into cavities in their sides; and in the hollows of old roads, or among the rubbish of stone quarries.

Almost any plantation in a shallow soil, with a loose stony bottom, will prove this; for it is not possible that the trees in them are nourished by the top soil only, when, as is often the case, they are growing freely where it is not six inches deep. Had they no other support, we should sometimes find the larch completely at a stand in its principal growing season; for, at that time, such soils are frequently so very dry as to be unfit for vegetation.

That trees have been so stopped where the soil was thin, and either a compact rock or a clay bottom, I readily allow; but I never knew it where they had a bottom something like what I have been describing.

Having now, I trust, clearly demonstrated the point in question, I proceed to show that they will thrive where seve-

ral other forts will not; for, upon a common, called Honley-Moor, in this neighbourhood, (being part of the range of hills before mentioned, and where I have been concerned in planting nearly two hundred acres,) I occasionally introduced the oak, ash, beech, birch, and sycamore, not one of which would succeed; and, by accident, I discovered that it was the same with respect to common thorns.

About seven years ago, a gentleman, contrary to the usual custom of fencing with walls, ordered a ditch to be made, and a hedge of thorns planted, with a few two-feet larches and Scotch firs, four or five yards from each other. The larches are now, on an average, ten feet high; the Scotch firs about eight feet; and the thorns only six inches:—and, though the latter are free from weeds, (the soil producing none,) and have not

been cropped by cattle, there is no probability they will ever grow to be a fence.

Further, these trees will grow better upon such lands as are improper for corn and grafs, and trees in general, than on some that have a tolerable depth of good foil. This, at first sight, may, perhaps, appear a hardy assertion; but, I presume, it will not be disputed by any, who have had an opportunity of noticing larches, that have been planted from twenty to thirty years upon such soils, with a clay bottom; for though they almost uniformly grow freely, during that period, yet, afterwards, they commonly grow less so, and frequently die at the top; when no further good can be expected from them.

The reason seems to be this: supposing the depth of foil to be nine inches, and the trees planted at the distance of three feet, which is common with plan-

ters; every tree has only six solid feet and three quarters of soil, to exhaust or subsist upon; and they are generally suffered to stand, without thinning, from seven to twelve years. In that time, as their leaves or spines could have benefited the ground but very little, it is not to be wondered at, if, even before thinning, the soil should be nearly exhausted, and the trees checked in their growth; the wonder would be, if it should prove otherwise.

But admitting the trees to be thinned, within the time above mentioned, and half the number, originally planted, taken out; every tree would have only thirteen solid feet and a half of exhausted soil for its share; consequently, would be pinched of nutriment, while the trees planted upon soils with a loose bottom, constantly pushing their roots into stratum not before exhausted, and far below the ef-

fects of drought, would continue to thrive, till their ample trunks gave assurance of the desired reward.

With persons who plant upon a large scale, every thing that expedites the operation will have weight. To such, I trust, I shall render an acceptable service, by presenting them with the annexed copperplate, descriptive of two tools, which I invented, and have long used, as substitutes for the spade, in making holes and planting. The former operation, in land covered with strong heath, or full of stones, or both, when performed in the usual way, viz. with a spade and a mattock, is known to be exceedingly tedious; for, if but one man be employed, much of his time is lost by the change of tools; and, if two, it often happens that one of them has not sufficient employment.

The first is a mattock, made particularly light, with one end about five inches broad, and thirteen long, from the centre; the other, a small end or pike, eighteen inches long. With the former, which must be sharp, we strike off the sod or heath, and with the latter loosen the soil, in the place where the hole is to be made; taking out the stones, if large, but leaving the soil. This work, upon heathy land, may be done any time in summer or autumn, when labourers are most at liberty, though the land should not be planted till the following spring.

The other tool we call A PLANTER; the form of which will best be described by the plate. The length is eight inches, from the eye; the face or edge four and a half broad, and the handle twelve long. The heel, or part behind the handle, is made stronger than the rest of the neck, and is for breaking any clods that

may be found in the holes, which, by a stroke or two, will be done effectually.

The person being provided with a basket, holding the tree in one hand, and the planter in the other, strikes the latter into the soil, about the centre of the hole, and pulling it towards him, puts in the tree with the other; then pushing the earth to its root, with the back of the planter, and pressing it a little with his foot, the operation is performed, with a degree of neatness and expedition, which the most expert can never attain with the spade. The action is so simple, that a common labourer may safely be trusted with it, which is not the case when a spade is to be used; for then a dexterity is necessary, which some men are years in arriving at, and others never acquire. Even a boy of fifteen years old, or a woman may perform it, so as to do the work of men:—and though the saving, by the

use of the former of these tools, cannot be equal where the land differs from what I have described, yet they will be applicable to, and of great service in, all general cases of forest planting.

Under another head, I have noticed some objections to the planting of forest trees so thick, as at the distance of three feet; but there are others which must not be overlooked.

First, in planting trees at that distance, one acre will take 4840, and, at four feet, the same will take only 2722; so that, in the latter, there will be a saving of more than two fifths; as more land may be planted at that for three pounds, than for five at the other.

Secondly, after the above extra expence has been incurred, and the plants have exhausted the land for a number of

years, it becomes necessary to thin out, at least the difference betwixt the two numbers, when they are fit only for fuel; therefore, of but little value in any situation, particularly where fuel is plentiful: and further, which is a serious objection, by enhancing the expence, discouragement is given to the ardour of the planter.

I am aware of the defence, made by the advocates for thick planting, viz. that the trees, growing thick, shelter and draw up each other; but, on the whole, I believe, that such drawing up is more injurious than the shelter is beneficial, except, as before hinted, in very open situations; for when trees, that have been so drawn up and sheltered, and are very slender in proportion to their height, become suddenly exposed by thinning, they are frequently broken by the winds; but if they escape, being top heavy, many

of their roots get sprained, and they are so much twisted and bent, in their stems and tops, that vegetation is obstructed, and their growth impeded for several years.

Of this inconvenience much might be avoided, by looking over and judiciously thinning the plantations every year, after the trees begin to mix their branches; but, through inattention, it is frequently neglected, and more so, by a cause which I shall not fail to remark.

After considerable practice, and examining the subject with minute attention, I think four feet the most eligible, as a general distance, be the situation what it may, in regard to local circumstances. There is no waste; for every tree that is planted may remain till it is saleable, either as a rail or a spar, without injuring the rest; thus every atom of nutriment expended answers some good

end:—nor is there much fear that either this or the subsequent thinnings will be omitted; because, when men have once found that they have an article of value to dispose of, and must sell it, to benefit the remaining stock, they will not neglect to forward the business; while, on the contrary, few can set about thinning a plantation of young trees, not likely to pay for the trouble, without great reluctance,

As larches are seldom materially hurt by any other than the west and north winds, those grounds which are level, or inclined to the south or east, must have a skirting of Scotch firs to the west or north only, to screen them; that is, the first two ranks should all be firs; then fir and larch, alternately, to the breadth of ten or twelve yards; by which the winds would be sufficiently checked in their first attack. If the planter be in-

clined to add more, they may be mixed, in a sparing but regular manner, throughout the plantation.

When the ground inclines to the north or west, the plantation should have a liberal quantity of firs introduced at certain distances, in addition to the skirting, and regulated by the rise of the ground: for instance, a rise of ten yards in fifty, would require the firs every fifty yards, and so at greater or less distances, according to the ascent: but, in case of steep banks, the skirting should be planted extra thick; and the firs, in the proportion of one to two larches, should be mixed through the whole extent.

The above precautions, in regard to shelter, which are applicable only to soils not fertile enough to produce deciduous trees in general, may seem unnecessary to persons unacquainted with mountainous

situations, but a little observation will evince the contrary; for, in such places, the outside larches are crooked, and have nearly all their branches growing on the sheltered side; in which state they improve very slowly.

The size of the trees should be adapted to the particular circumstances of the place where they are to be planted. In forest planting, where the ground is healthy, or not capable of growing much grass, or weeds, and the top stratum, of black soil, is not more than six inches deep, larches of two years, which have been one year transplanted, are the most proper; these should be the best of that age, from twelve to eighteen inches high: but if the top stratum exceed that depth, larches a year older, or what are usually called two-feet plants, are preferable; for, being stronger, they sooner push into the bottom stratum, and, therefore, make

much quicker progress than such as are smaller. As to Scotch firs, those of four years old, that have been two years transplanted, are best for the situations in question, unless they be very bleak; when plants of three years old, one year transplanted, should be preferred.

In fertile lands which produce a considerable quantity of grass, weeds, or brushwood, and where the latter has been cleared, the plants should never be less than two feet high, to prevent their being smothered. Indeed, where proper care is taken partially to clear the brushwood, so that what remains gives sufficient shelter, plants of the largest useful size may be admitted, viz. firs of three feet, and larch of four or five; for such as are higher seldom do well, except they have been removed one or two years before.

Here I think it right to give a caution in the choice of Scotch fir plants; which should be such as are stiff, and have produced branches near the ground, on all sides; as they are not only more able to resist the winds, but have generally good roots; while small weak plants, with bad ones, that have few, if any, side shoots, bend under every blast, to, and even beneath, the surface of the ground, so that a hole is formed round the stem, into which the air penetrates. By this means, many of the plants are prevented from vegetating; and such as do succeed, make but slow progress for two or three years.

The size of the holes should always be in proportion to that of the plants: for example, trees from twelve to eighteen inches high, require holes twelve inches deep, and as many wide. They ought to be sufficiently large; for though

the loose earth, in a hole six inches deep, may cover the roots, yet their chance of growing is much better when there is a quantity of loose soil for them to strike into; besides, the earth, in such holes, will retain its moisture considerably longer than in those that are shallow, especially if the planting be performed in the spring; the holes having been made some time in the summer, or latter end of the preceding year, and had the benefit of all the winter's frost, to tender and mellow them. In addition to these advantages, deep holes are very desirable, where the top soil is a black turf; as, in making them, it opens and brings up a part of the second stratum, and gives the plants an opportunity of pushing into it much sooner than they otherwise would do.

The greatest objection to spring planting is, the frequent failure of the plants, for want of sufficient moisture, particu-

larly if they have been some weeks out of the ground, in consequence of having been *brought from a considerable distance*, in severe frosts, or at the season when the sap is in motion.—It is admitted, that some trees are much less liable to be so hurt than others; but, as all must suffer less or more, (there being no mode of preventing it, when the plants are long upon their passage,) it is best to avoid the causes as much as possible.

There is a method of guarding against the effects of drought, and which may be applied as a remedy to trees in some degree injured by it, viz. puddling; which we perform thus: as we take up the trees, a person cuts a hole in the ground, and pours into it a quantity of water; he then works the soil with a spade, to such a consistency that, when the trees are dipped into it, a considerable quantity will stick to their roots: another, having

taken off the extremities of the roots, keeps dipping them, by small quantities; after which, they are bound together, in bundles of two or three hundreds each, according to size, and conveyed to where they are wanted; then placing them together in an upright position, in any situation that is sheltered, straw is carefully put round the outsides, to keep the air from drying their roots.

Provided the soil for the puddle be a binding loam, or inclining to clay, and the air carefully excluded, such plants will retain a considerable degree of moisture at their roots, for some weeks after planting; nevertheless, where the situation affords the means, the bundles should be dipped before they are unbound, as the outside plants will be somewhat more dry than the rest; but it may be dispensed with where proper care has been taken.

Should it be asked, where is the necessity for puddling, as early planting, seemingly, will render it unnecessary? I answer, that, by planting early, the holes frequently lose much of the benefit of the winter's frost; mean while, the trees, particularly in wet situations, suffer by it; being raised, in some degree, out of the ground, and left so that subsequent droughts are much more likely to injure them, than those which are planted later.

In very tender soils, and dry sheltered situations, trees not more than two feet high, may be planted with safety, any time in autumn or winter, if the weather be open; but, as the cases are not numerous, they make little difference to the general argument.

The process of puddling is so very simple and cheap, that its expence scarcely deserves notice; yet with these advan-

tages, added to its extensive usefulness, this discovery, known for at least an age, has been hitherto generally, I might say stupidly, neglected. However, I earnestly recommend it in all cases of spring planting and transplanting, whether the trees are six inches or sixteen feet high, and the advice is not theoretical, for, after practising it many years, in late planting, frequently throughout April, I never had any serious loss when the plants and holes were in proper condition; and, I believe, most of the losses, so common among late planters, might be traced to these causes, and not to the lateness of the season.

It sometimes happens, in planting upon heathy soils, that, in certain places, the top stratum or black soil is so thick, that the trees cannot force their roots through it; and should such soils be planted in the usual method, the trees

would be found almost at a stand for several years. In this case, the best way is to cast up the land in trenches, in a serpentine direction, by which the appearance of regular rows will be avoided, and the passage of the winds prevented: these should be intersected by others of the same sort, sloping at the sides, and about four feet wide at the bottom; except such as are to carry off the water, which should be two feet wider, and one side thrown up a little, so as to form a shallow ditch for that purpose.

The distances between them should be sufficient to hold the soil to be cast up; and the number of wide trenches, in proportion to the water likely to be collected; but care must be taken that each have only a very moderate quantity, for it will, otherwise, soon wash them so as to bare the roots of the trees.

Two rows should be planted in every trench, whose roots will eventually occupy all the land, though, in the first instance, less than half the usual quantity will be used; and if three or four inches of black soil be left in them, it will do no harm, as the roots will be planted beneath it.

This mode of planting will greatly enhance the expence; and, therefore, can be recommended only for parts of plantations, where the trees would not otherwise succeed; in which case it is certainly worth adopting.

In large pieces of planting, we sometimes meet with other parts, that are clayey and wet: this is a difficulty, and must be overcome, or the plantation will be imperfect; the first thing, therefore, to be done is, to render them dry by means of open ditches, (which ought never to

be neglected, where the ground is at all springy*,) afterwards, instead of making holes, a quantity of soil should be got from the nearest convenient situation, to raise hillocks, so as to plant the trees upon the surface of the ground.

As the trees for such situations should not be more than one foot high, about a peck and a half of soil will be sufficient

* Open ditches, independent of a saving of about two thirds of the expence, in the first place, are much more easily kept in order, than walled or set drains, which must inevitably be choked up by the tree roots, in a few years after they begin to grow freely; and there will then be either a considerable annual expence incurred, or they must be taken up, and left open. Besides this, where the ground lies upon the descent, they will continue to improve, by wearing deeper in moist soils, particularly where the bottom is loose and stony; for then, by taking out the stones washed bare about once a year, the ground will be effectually drained, at an expence too trivial to be noticed.

for each hillock. This work should be done in autumn, so that, by the spring, the soil will not only be mellow, but the turf beneath it, in some degree, rotten; both which will promote the growth of the plants. But if the place be bare of grafs, and exposed to winds, it will be safer to defer the business, to one year after the others are planted; as, in that time, it will have got a good covering of grafs, which will prove highly beneficial, by sheltering both the hillocks and trees, and affording additional nutriment to the roots.

To such as may smile at the supposed absurdity of planting trees upon the surface of the ground, I would state, that the question is not, "have such things been usually practised?" but, "is it right or wrong?" Is a hole more proper for the plants, where they have nothing but clay to strike into, or a hill,

where they will have the benefit of all the surrounding soil?

General directions for planting such soils as are good, and sufficiently deep, are unnecessary; for whoever attends to what is advanced, in regard to those that are more difficult, will find it easy to plant them with success.

It is well known, that larch and Scotch firs grow rapidly upon exceeding thin chalk soils, the only difficulty being to get them to succeed at first, as they are pinched of both earth and moisture. I have known very large tracts planted in the following manner; of which, (as some practitioners seem to think it excellent,) I shall give the reader the full benefit.

The holes are made in autumn or winter, by cutting a square sod, and turning it, with the sward downwards, into the

hole ; in the centre of which they plant the trees, (in general two-year seedlings,) with a dibble or setting stick, the spring following ; and thus the process ends. A *simple* and *expeditious* method, truly ! and if equally successful, it should not want my approbation ; but, as it has frequently happened that the planters have sustained very heavy losses by it, (sometimes to the amount of half the plants,) attempting to account for it may be useful.

I observe, then, that on the sod being turned over, all or the greater part of the soil is raised up with it, and, in most cases, some of the stones below are laid bare ; probably many project higher than the surrounding soil ; so that when the sod is reversed upon them, it will be somewhat hollow, which will prevent the turf from rotting so soon as it otherwise would do ; and, consequently, in spring, when the trees are to be planted, the hole is

found nearly in the state it was when first dug; and as the extremities of the roots may be supposed to reach the bottom of the turf, or the hollow, many of them die by drought. Therefore, if one of the causes of vegetation be moisture, and this method does not promote it, so far as the particular circumstances will admit, it is clearly defective; and I leave it for decision, whether the following mode be not founded on more rational principles.

Let the workman take a planter's mattock, which is pretty sharp, and switch off the turf from the ground, as thin as possible, about two feet long and one broad, and draw it towards him; then turning to the other end of the bared place, loosen all the soil, and pull it to the part next him; he will thus have a hollow, of about one foot square, which, if not more than three or four inches

deep, must be increased to five or six, by taking out the stones; into this he must put the turf, and tread it close, to promote its rotting; then drawing the soil over it, a hollow will be left at one end, and a little hillock raised, for the reception of the trees, on the other.

If this were done early in autumn, the holes would be found in good order, in spring, to receive the plants, which should be larches of two years, that have been one transplanted, (say, the least of that age, viz. from eight to ten inches high,) and Scotch firs of three years old, which have been one transplanted.

It may be supposed, that, by raising the soil somewhat above the surface, many of the plants will be destroyed by drought. But the surrounding grass, the mellowness of the soil, the increased quantity, and, above all, the rotten turf below,

operate as preventives; and the roots, being placed upon a level with the soil round the hole, (not below it,) will, if puddled, as before directed, be in no danger.

To obviate every possible objection against cultivating so important an article as larch, I have bestowed some time in considering such as may arise, and find but one of consequence enough to be noticed, which, I think, has more of the nature of doubt. It is this: "Whether the article has not had a fair trial, and been rejected for some cause at present unknown?" I will, therefore, examine the point, and advert to what I conceive the principal causes of our ignorance, respecting its culture and uses.

Perhaps it would be difficult to discover, and avail little if known, when the larch was introduced into this country. From what we read, however, in Evelyn's

Sylva, written one hundred and thirty-seven years ago, it appears the plant was then to be found in curious collections.

He says, “ *that it flourishes with us
“ a tree of good stature, (not long since
“ to be seen about Chelmsford, in Essex,)
“ sufficiently reproaches our not cultiva-
“ ting a material so useful for many pur-
“ poses, where lasting and substantial tim-
“ ber is required.*” These are the words of a man whom succeeding ages have held in veneration, and they evince at once his penetration and his patriotism. He had heard of the extraordinary qualities of larch timber, and seen some trees, which, from their flourishing state, showed that it would thrive in this country; and, to a mind like his, that was hint sufficient.

I think I see the venerable man looking at the plant, contemplating the a-

mazing advantages that after ages would experience, from due attention to the *goodly stranger*, and calling it, as it were, to bear evidence against the negligence of his countrymen.—Unfortunately for the nation, he called in vain; for it is evident that Millar, who wrote seventy years after him, and whose authority may safely be quoted, as a favourable specimen of the knowledge of that age, knew little of the nature of larch timber, but what he had gathered from the writings of the former.

The only new observations of importance, which he produces, are, that “ *this tree is very proper for the sides of barren hills, where few other sorts will thrive so well.*” And, in another place, he says, “ *the tree is now pretty common in the English gardens;—is a native of the Alps and Pyrenean mountains; but thrives exceedingly well here, especially*

“ if planted in an elevated situation, as
 “ may be observed by those which were
 “ planted a few years since at Wimbledon,
 “ in Surry, which are now grown to be
 “ large trees, and produce annually a
 “ large quantity of cones.”

Here we have the fair result of seventy years' experience, and the aggregate is shortly this: *the trees will grow well on barren hills in England*:—which could hardly be doubted, when we consider it as a native of the *Alps* and *Pyrenees*. But, though this observation appears to afford some encouragement to plant it, for timber, it seems to be counterbalanced, by directions for raising the plants, and planting, sufficiently tedious to deter any man of common prudence from cultivating them, except on a small scale; and, probably, a general caution that he gives, in his preface, against encouraging the planting of foreign trees in large quanti-

ties, till their WORTH be fully known, has, in regard to the larch, operated much against its cultivation.

He and Evelyn, it is true, have both greatly extolled the qualities of its timber; but, it is obvious, the one, with the advantage of seventy years' experience, was, in that respect, barely a copyist of the other; and that the latter, instead of drawing what he communicates from experience, brought it from foreign authority:—a source which issued so much of the marvellous, that we pause in giving full credence to the account.

The above must have greatly contributed to occasion such a scarcity and excessive dearness, by circumscribing the demand, (which, otherwise, would certainly have reduced the price,) that, it is highly probable, the plant could not then be generally used, even for ornament;

hence it is that we have now so few old larch trees, and the consequent difficulty of forming a correct estimate of the value of its timber; which could not possibly have happened, had these writers been able to view the subject distinctly; as, by the weight of their authority, in planting, they might be said to direct, if not to form, the taste of their age.

When such men leave an important subject undecided, it is no wonder that those who immediately follow them do the same; for, where the former have no certainty, the latter may be permitted to doubt; and thus age after age is consumed, and man remains in ignorance.

If this be an object of national concern, it ought to have been distinctly treated as such; but I do not know that any writers have shown, that they had a clear and comprehensive idea of its im-

portance: possibly there may be exceptions, but, if found, I believe they are only, among other matter, in expensive works, rarely seen but in the libraries of the opulent: a method not much calculated to benefit the bulk of mankind, as it shuts the avenues to knowledge, which, that its advantages may be offered to all, ought ever to be open to the inquiring mind.

But whatever have been the opinions of late writers, the effects are obvious; and our concern is increased, when persons of enlarged minds and liberal fortunes, (whose exertions and example qualify them for benefiting their country,) grasp, with the most laudable intentions, all the assistance which the present state of knowledge affords, and find their efforts meet not with deserved success. Such instances are numerous, for almost the whole of their plantations show this;

and I trust there is no impropriety in producing one, as a fair specimen, taken from a person of the first consequence, as a gentleman and a planter, who has published his ideas upon the subject*.

He planted, in two years, ninety-four acres of mixed timber trees, upon land so extremely bad (I understand, a thin chalk soil,) that nothing but sainfoin was worth cultivating upon it. The larches which succeeded best, were two years old plants, that had been one transplanted; part of which, after three or four years' growth, were from six to seven feet high. The birches thrive much better than the other deciduous trees; and, though many of them died at the tops the first year, they afterwards made very vigorous shoots. The elms and sycamores did not grow by

* See the Transactions of the Society for the Encouragement of Arts, vol. ix. p. 9.

any means so fast as the before-mentioned trees; but the larch grew so very luxuriantly, that, he says, in a few years, he should be forced to thin them considerably, to prevent their smothering the other trees.

The number and species, planted upon the ninety-four acres, were as under:

145,000	Larch
72,500	Scotch Fir
50,000	Ash
40,000	Sycamore
45,000	Elm
600	Oak
600	Spruce Fir
30,000	Birch
10,000	Mountain Ash
400	Weymouth Pine
200	Horse Chestnut

394,300 or 4194 per acre.

From the above statement it is obvious, that the larch had, *some how or other,*

obtained a preference, as more than one third of the whole was of that species: and, from the other particulars, we might suppose their management merited superior attention; instead of which, we are told, that in a few years they must be thinned considerably, “ *to prevent their smothering the other trees.*” But when we examine the list of *other trees*, (the Scotch firs excepted, as we have no account of their success, and the oaks are out of the question, being few more than six to an acre,) we find it difficult to guess, what part of them it was that deserved encouragement rather than the larch, as, with only one unworthy exception, they thrive indifferently.

Observe, the encouragement here spoken of certainly meant a permanent one; for if the larch must be so treated, to answer the aforesaid purpose, the same cause occurring, repeatedly will require the same

remedy; so that, instead of raising its lofty head, in the course of a few years, far above its fellows, and increasing in value three times as fast as any around it, the presumptuous stranger will, finally, be exterminated, to make room for its *bettters*!

“ So falls the mighty !” (not the mighty “ foe;”) while stupid ignorance and hoary error forget not to exult.— Friends of the nation, immediately unite, in raising your voices against a practice so destructive and absurd:—inform your countrymen, that such a waste of the gifts of heaven is unpardonable:—tell them, that providence has qualified our country for producing this wood, as abundantly, and as perfect in its kind, as the grass of the field:—tell them, in recommending its culture, you bid them study their own interest, and eventually that of the human race:—tell them, too, (to shame those whom you cannot per-

suade,) that such undistinguishing havock proves them to have less sagacity than the beasts of the field; for they, the creatures of instinct, know what is necessary to their wants; but men, the children of custom, blindly overlook it.

On returning to the business of planting, the opinions of others are deserving of attention.—Some writers recommend trenching the ground, for that purpose, which will greatly forward the growth of the trees, in most cases; but, as the cost more than counterbalances the advantages, and there are other effectual methods at not an eighth of the expence, it can make no part of the system of planting for profit.

The reason for such preparation is, that the trees may receive a greater supply of nutriment, in consequence of their roots spreading freely, in a loose, moist,

and rather fertile foil; and by this it is obtained, in a greater or less degree; for ground well broken will not only be looser, but sooner imbibe, and longer retain, moisture, than such as have not had that advantage; and a strong sward, when rotted and broken, affords a nutriment highly conducive to the growth of the trees. But light soils, being, in a great measure, prepared by nature, must derive from this process much less benefit than strong ones.

There is a general observation, which the planter should particularly attend to, namely, that the necessity for preparation is increased with the size of the plants; which may be thus accounted for:—a small one, in removing, loses but few of its roots, so that its means of support continue to be nearly in proportion to its expenditure, while, in regard to the others, it is quite the reverse. This dispro-

portion may, in most sorts of deciduous trees, be reduced, by diminishing the tops, but in the fir tribe it is impracticable.

Some light soils, bearing a strong fward, are too stony to admit either the plough or spade;—when such are to be planted, with trees of two feet or upwards, it will be a good and easy method of preparation, to have the holes made in autumn, something larger than for trees of the same size, where there is no fward, and put the turf, reversed, into their bottoms.

Perhaps the following will be found the cheapest mode of preparation, it being presupposed that the land is in fward, capable of being ploughed, and in some degree fertile; as it will, thereby, without any kind of manure, bring two tolerable crops of oats; which are likely to pay for rent and labour.

The first ploughing (which ought to be deep,) should be in autumn, and the ground well harrowed in spring, when the corn is sown; by which, the sward would be rotted before the next autumn; it must then be ploughed again, but, where practicable, *across* the former ridges, and remain in that state till spring; when, in most cases, an additional harrowing and ploughing, (besides harrowing for the seed,) will have sufficiently broken the sward, and mixed the soil, to leave it in fine order to receive the trees.

Grounds which are ploughed, for this purpose, ought to be left very flat; otherwise, the plants would be sure to grow irregularly, and more particularly so in shallow soils, with a close bottom. But if the planter choose not to wait a two years' preparation, as above, he may effect the business in one, by proceeding as in the former case, till he has reaped a

crop: immediately after, the sward should be broken and the soil mixed, by the means before mentioned, which, if the land be not very stiff, will prove sufficient.—Yet as, from diversity of soil and other circumstances, no two cases can be exactly alike, he ought to deliberate, what sort of preparation, if any, will be necessary, after applying the principles already laid down.

The next mode is applicable chiefly to small patches of planting, where the plough cannot be used, and the principal object is, most rapidly to increase the growth of the trees. The best method will be to dig the ground in autumn, and plant the trees, if small, the spring following; but, if for those three or four feet high, it would be better to defer it till the ground has produced one crop of turnips or potatoes; and the trees will be greatly benefited, by the crops being continued

for two or three years; nor need they be charged for the digging or tillage, as, under fuitable management, the vegetables pay for both.

But, where such attention is inconvenient, the following plan deserves to be adopted. If gentlemen would allot the whole or part of their grounds among their poor labourers, dependents, or neighbours, as gardens, to grow vegetables in for their families, the latter would find it their interest to cultivate them for their produce, so long as the trees left room for the crops. This will apply chiefly to lands tolerably good.

It is true, that the cultivator would lose, by adopting the old mode, of planting so close as at the distance of three feet; but, I trust, its absurdity has already been sufficiently shown; and if, in common cases, it be wrong, in this it will certain-

ly be much more so; as every plant may be expected to grow freely, and, therefore, very soon occupy all the room, though planted so wide as four feet and a half. And though this will save the expence and planting of 2690 trees in an acre, (the difference between the said distances,) yet a plantation upon a stiff soil, so managed, will, at the end of five years, be every way superior to one at seven, whose trees are planted at the distance of three feet, without digging the ground.

Thus, besides saving considerably more than half in expence, and two years in time, the leafy scene becomes much more delightful; which must ever be the first requisite in this department, and yet how seldom is it so attained as to be lasting.

Almost every person of taste acknowledges, that plantations never look so well as when young:—this general assent forms

that criterion of beauty which must furnish the attentive planter with abundant matter for reflection; as he will easily discover the pleasing combinations necessary to form the enchanting whole, and stretch his inventive faculties, that all the permanence which is possible may be given to the effect. For though much may be accomplished, by skilfully pruning and thinning a mixed plantation, of from ten to fourteen years' growth, however injudiciously planted, yet the benefit will be trifling indeed, compared to what may be done, when they have been first properly arranged. It is, therefore, of great importance, in that stage of the business, for the planter to know precisely, whether he is to form *a shelter*, or *an open grove*: a mature judgment being necessary to arrange the one, while the puny efforts of the merest tyro suffice to form the other: hence it has almost uniformly happened, by using the same means to accomplish

different ends, that, ultimately, the result has been the latter; and thus nearly the whole of the purposes, for which it was planted, are defeated.

Suppose, for instance, a house to stand upon a gentle declivity, and the spectator placed in any situation below; here, whether the view behind be terminated by the horizon, or carried, along rising grounds, far beyond it, and then bounded by hills, the effect of the building will be, in a great measure, lost, by the view of natural objects, infinitely larger than itself:—instead of which, introduce a thick plantation, and instantaneously the building appears increased in beauty, size, and comfort; while much of the same advantage is produced upon the lands contiguous; even the screen itself, if placed that the spectator can see nothing behind but the horizon, appears, to his imagination, an extensive wood.

If such be the effect, affording, at the same time, shade, shelter, and retirement, and if the value of timber be, at least, equal, by increase, to the rent of the land, it must be painful to observe the frequent mismanagement in planting and pruning, especially as the expence is not materially different.

In examining the common defect of screens degenerating into open groves, it will be found to originate in the neglect of that excellent maxim, “ provide “ for futurity ;”—as men leave that to chance, which, if raised with prudence, would be certain of durability to old age.

The most essential quality in a good screen is closeness ; like the recesses of a thick wood, it must be impervious to the eye of the passenger ; which can never be obtained, so as to be permanent, if part of the trees composing it have not the

properties of growing bushy, of retaining branches near the bottom, of producing closer heads, by being pruned, of shooting afresh from the ground, or any required height, after being cut down, and of growing under other trees: nor can any screen long retain these qualities, except they are carefully promoted and encouraged, by frequent and judicious prunings; which evinces, that the screen-planter must attend to three distinct objects, viz. the sorts of trees proper for the body of the plantation, for the fronts, and for furnishing a supply of underwood.

In regard to the first, he may have ample choice; and, provided he introduce none that will materially overhang the rest, (like some of the spreading sorts of poplars,) he may be governed by fancy, or the particular circumstances of the soil and situation; and in this case, as in most others, the larch will deservedly ob-

tain a preference; its beauty, in every stage of its growth, being exceeded by nothing but its usefulness.

The front ranks, or second situation, must principally be composed of the following trees, viz. beech, birch, hornbeam, English elm, limes, various thorns, (especially the common one,) crabs, and laburnums; as nearly the whole of them naturally grow thick, and, by pruning, may be made to assume any form.

The third, or trees for underwood, should be beech, birch, hornbeam, oak, common thorns, limes, and holly*: three

* Spruce Firs will make a valuable addition to the list of underwood; as they grow tolerably under deciduous trees, (if the latter be not very thick,) by taking off their leading shoots repeatedly, so as to occasion them to spread; but never lower than the wood of the preceding summer's growth; otherwise, they will appear bald and unsightly.

of them (though not ever-greens,) retain their leaves the greater part of winter, which is equally conducive to ornament and shelter; and all of them may be trained rather like bushes than trees.

While recommending the foregoing as underwood, I mean not to exclude such of them as are proper from the body or front of the plantation; nor, in the list of trees for the major part of the first rank of the principal front, must the fir tribe be omitted; as a small proportion may be used there to advantage, and a somewhat greater in the second, which should never be so large as to smother the lower branches of the deciduous trees.—But the planter must have three distinct lists for the aforesaid purposes; and, if his ideas have not been matured by experience, he should plant each class separately; at least, the principal front will always deserve that attention.

It is devoutly to be wished, that, besides a competent knowledge of his art, every planter would endeavour to acquire so much of painting, as to know something of light and shade; for, as great part of the effect must depend upon a due mixture of plants, with leaves of different forms and various tints, when still, and when agitated by the passing breeze, if that be wanting, the scene, disowned by genius, originates disgust.

To avoid simple uniformity, though of a light cast, we have discarded the straight and long-drawn vista of unvaried foliage; and why preserve it in the curving screen?—The planter's peculiar business is, to exhibit nature in her loveliest dress; and for this the mental labours and splendid abilities of a Louthembourg are not requisite, as she has opened her abundant store, where every figure is drawn and coloured by her matchless hand, and

arrangement's task alone is wanted, to complete the charm.

In the projecting bends of the screen, the mixture of firs should be somewhat liberal, and decrease gradually to where they recede: besides this, the appearance of such parts may be varied, by change of species, or letting different sorts predominate in each of them; and the same mode should prevail in the elevated parts of every ornamental plantation, always avoiding an abrupt change of plants: nor, in forming detached clumps must the precepts of nature be disregarded, in whose original works it is not probable, that one species was ever adopted to the exclusion of all the rest; and the skilful planter, if one sort of trees be more esteemed than another, gives, with propriety, that the preference; but, proud to copy such an instructress, introduces, with it, a greater or less variety; thereby ei-

ther making one fort the basis of several clumps, and varying them with different sorts of trees, or making separate kinds the basis of every separate clump, and varying the auxiliary plants: thus, by improving upon the simple though chequered scene, he may produce that undefined something, which, with invisible fetters, binds the attention, but enraptures the mind of the admirer of taste.

The foregoing observations though applied to ornamental planting only, are equally applicable to any case of shelter and profit, where the ground is fertile enough to produce trees required for that purpose.

Before I quit this subject, I shall make a few remarks on the culture of the single trees, or small groups, whereupon most materially depends the rural scenery of our parks and lawns.

First, in regard to those found in such banks of old inclosures as are to be reduced, to level the ground:—care should be taken, after the trees intended to remain have been selected, to disturb their roots as little as possible: for want of this precaution, in thin soils, we frequently find trees, previously in a thriving state, so suddenly checked, as soon to exhibit all the marks of premature decay.

When the displacing of a great number of roots cannot be avoided, and the beauty of the trees is particularly desirable, a quantity of good light soil should be laid, for some yards round them, so deep near their stems, that the ends of the roots newly cut off may be covered; by which, they will readily strike into it; and, if it form a gentle swell, rather than a hillock, the trees, though checked at first, will generally, in a short time, resume their wonted health and vigour. This

may be accelerated, by taking off the lower branches, where they are too low, and also the extreme ends of the rest; but it must be done so as to improve the uniformity.

If old inclosures produce not the required number of trees, in proper situations, the best expedient is, where such means are attainable, to transplant them from plantations of from six to ten years' growth; and the following is an old but excellent method of preparing for it.

Admitting the planter to be apprized that he shall want a certain quantity of trees, at least one year before the time, he must mark out such as can be spared, and will suit his purpose; having the whole dug round, about eighteen inches from the stem, and the roots so cut that the plant, with its ball of earth entire, may be pulled to one side; when, if for a shallow soil,

the ball may be reduced in thickness, and the lower roots shortened. It may then be replanted in the same hole, and remain till wanted, by which time it will have produced a great number of small roots, in place of the large ones cut off: these may be shortened when the tree is removed; which may easily be accomplished without breaking the ball. But, as what has hitherto been done, is only preparatory to its future success, where the soil is shallow that defect must be remedied; and, therefore, instead of making a hole deeper than the soil, it will be sufficient to stir the earth only to that depth, leaving three or four inches under the ball, and the deficiency must be made up, as directed for trees that have been deprived of a part of their roots.

When those of the last description cannot conveniently be attained, it will be best to procure plants of a large size from

a nursery; but, instead of being planted where they are to remain, they should be set in a good garden soil, for one year, that they may produce small roots, to replace the large ones lost in removal: but, previous to being thus transplanted, they should have a complete trimming, by taking off close all the branches, to the height of seven or eight feet, and shortening those which are higher, to the length of two or three inches, as they will make shoots from these stumps, of which a number may be selected to form the future branches.

The sorts here alluded to are oak, ash, beech, elm, chestnuts, limes, platanus, and sycamores. If poplars are to be planted large for such purposes, in addition to this pruning, their tops should be shortened, as the means of stiffening their stems, at first; and it is easy to train them to a regular head afterwards.

Having stood one summer in the situation last directed, the trees may be removed; using the same precautions in regard to soil, where required, as in the two last instances; after which, if properly fenced from cattle, and secured from winds, the planter will have only to wait the event of such extraordinary care, certain that he has overcome the difficulties, and escaped the mortifying disappointment almost inseparable from this kind of planting.

Hitherto I have spoken of shelter and ornament chiefly as they relate to gentlemen's lawns and parks; but the plain man of a few acres, devoted entirely to agriculture, is not hence to suppose that he has no interest in the business; for, independent of the general want of timber, either his lands, his cattle, or his buildings need sheltering; some disagreeable object, or some prying eye, wants exclud-

ing, in common with the boisterous elements; for all which nothing is so easy, cheap, and effectual as planting; but I retract the word *cheap*, it is gratuitous,—as a plantation can seldom be prevented from increasing in value, equal to, or much beyond, the rent of the ground it occupies, except by mismanagement.

It is not a leading object of this treatise, to state in how many ways planting may conduce to the improvement of estates; but one pleasing change invites attention, where it is capable of making the bleakest scenes delightful.

For example: an estate of a thousand acres of mountainous land, usually termed barren, because of its bleakness, and let for not more than twelve shillings per acre, would cost, at thirty years' purchase, eighteen thousand pounds: if the purchaser expend a thousand more, in planting

and fencing an hundred acres, so situated as ultimately to screen the whole, allowing compound interest for that, with the accumulating rent of the land, for fourteen years, the estate would then have cost about twenty-one thousand two hundred pounds; and the account for it, with fourteen years beyond that period, may be stated as under :

	£.
Paid for the Estate	18,000
900 acres, improved by shelter, 3s. per acre, at 30 years' purchase	4,050
Value of 200,000 trees, (chiefly larch,) at 6d.	5,000
Estate worth, at the end of 14 years	27,050
Cost, as before mentioned, about	21,200
Improvement by planting	5,850
Do. by trees, in 14 years more, at 1s. each	10,000
	15,850
Deduct, for rent of 100 acres, at 6ol. per annum, with compound interest,—about	1,175
Estate improved by planting, in 28 years	14,675

In making the foregoing calculations, I have made full allowance for the expo-

ture of situation, as it is not uncommon to see larch worth as much money in less than half the time; but, probably, if the whole were suffered to remain to the end of the term, the improvement might not be so great; yet, if the thinning were properly attended to, the value of standing trees, with the produce of such as were sold, could not be less than the stated average, independent of expences, viz. 1s. 6d. per tree, or 125l. per acre*.

* It is material to the present, as well as the principal object of this treatise, that larches will grow to considerable scantlings, though very near each other, providing the soil be suitable, (and mountainous ones are almost uniformly so;) for the nutriment collected, by pushing their roots into fresh strata, is very little wasted, either in spreading heads or useless arms; as they need not have any of the latter, and but as few of the former as are sufficient to attract the sap to the support of the trunks; all of which, from their very bases to where they are three inches in diameter, may be considered as valuable timber:—and, of the rapidity of their growth, the following is a direct (but not uncom-

Should the estimate for the benefit of shelter be thought over-rated, a consideration of its direct and remote consequences may probably change that opinion. Among the immediate benefits are the following: grafs will not only grow more freely, at all times, but earlier and later, consequently the crops of hay will be increased much, while cattle, being better fed, and less exposed to inclement weather, will thrive better than if it were the reverse; and, which is of greater import, CORN of every sort will be more early

mon) instance. In August last, I purchased seven larch trees, of about thirty-five years' growth, containing together 199 feet of timber, or about $28\frac{1}{2}$ each, on an average: they grew upon a thin soil, with a loose bottom, of reddish yellow sand, in a plantation of oak, ash, beech, fycamore, &c. which, though of the same age, were then so inferior in value, that even the best of them would not have fetched 8s. per tree.—Any objections, from apprehensions of exposure, (by displacing the lower branches of the larch,) will be obviated, on turning to the observations on shelter.

and regularly ripened, of course heavier ; besides being screened, while standing, from the *ruinous effects of shaking winds*, for which there is no other remedy than cutting down the grain before it is ripe, to prevent its being wasted.

Many are the remote benefits of shelter ; but I shall content myself with one, the fruitful parent of all the rest. It affords the facility of converting the once cheerless and solitary wilds into the social haunts of men, who never fail to bring with them their wants and their resources ; and, if duly encouraged, population is as certain to increase : while that is the case, the fertility and consequent value of the surrounding fields increase too ; for it is rare indeed to find land cheap where men are plentiful, and still more so to find their numbers, once established, decrease, except through the wretched policy of rapacious or mistaken landholders.

I have been anxious, through the foregoing treatise, to acquaint the reader with principles rather than opinions; the one being unalterably fixed, while the other must ever be as various as the attainments of man:—this compels the pupil of the latter, always infirm, to move on crutches, while that of the former, loose from trammels, feels conscious of his strength.

Consistent with this, calculations have been avoided, (except one which became peculiarly necessary,) as the weight of produce will always differ with varying circumstances;—whoever, therefore, is inclined to plant for profit, should make his estimate from the state of plantations upon land of a similar description to his own, and that in the neighbourhood; if the one have succeeded, he need be under no apprehension for the other.

Far from being unduly biassed by the interests of my profession, this system has economy for its basis; and having eighty acres thus planted, on my own account, I am conscious of acting and writing upon the same principle, viz. *UTILITY*:—for I have long been convinced, that it is not only practicable but easy for this island to grow fir timber, for its own consumption, without opposing the interests of agriculture. The end is confessedly important, and to promote the means, my best endeavours, though feeble, have not been wanting: and if in this or any future attempt, to forward the same *GOOD CAUSE*, they be found in the least degree successful, I shall have the consolation to think, that I have not lived in vain.

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